ab-Exponential regression Calculator

Analyzes the data table by ab-exponential regression and draws the chart.

ab-Exponential regression: $y=AB^x$

(input by clicking each cell in the table below)

data

No.	x	y
1	302.20398553634334	0.43460552002626957
2	401.9088595421428	0.36869450645195767
3	505.31795273644065	0.3232390409347363
4	598.0471976105778	0.2944744498230481
5	701.7038286703822	0.2697443649870472
6	809.2217409292141	0.25118864315095807
7	905.4157189380937	0.2377882968026018
8	999.999999999999	0.22758459260747893
9	1987.519712084896	0.1665054953069651
10	3009.0126602227697	0.1412537544622755
11	4001.763393264597	0.12451970847350334
12	4966.609758663147	0.11343887340720292
13	5954.691781536963	0.1033441063880557
14	6986.789735577608	0.09729605646212959
15	7953.583627213136	0.0911011395688753
16	8937.571151054222	0.0862410996895277
17	9956.892709017235	0.08208914159638261

(Inc/Dec of the row)

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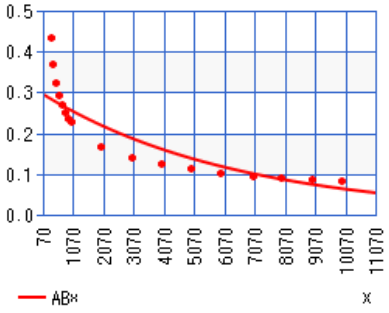
function	value
mean of x	3,469.309048
mean of y	0.1738025013
correlation coefficient r	-0.9299736976
A	0.297558777
B	0.9998450266



Guidelines for interpreting correlation coefficient r :

0.7<|r|≦1 strong correlation
0.4<|r|<0.7 moderate correlation
0.2<|r|<0.4 weak correlation
0≦|r|<0.2 no correlation

ab-Exponential regression

(1) *mean*: $\bar{x}=\frac{\sum x_i}{n}$, $\overline{lny}=\frac{\sum lny_i}{n}$

(2) *trend line*: $y=AB^x$, $B=e^{\frac{Sxy}{Sxx}}$, $A=e^{\overline{lny}-\bar{x}lnB}$

(3) *correlation coefficient*: $r=\frac{Sxy}{\sqrt{S_{xx}}\sqrt{S_{yy}}}$

$S_{xx}=\frac{\sum(x_i-\bar{x})^2}{n}=\frac{\sum x_i^2}{n}-\bar{x}^2$

$S_{yy}=\frac{\sum(lny_i-\overline{lny})^2}{n}=\frac{\sum lny_i^2}{n}-\overline{lny}^2$

$S_{xy}=\frac{\sum(x_i-\bar{x})(lny_i-\overline{lny})}{n}=\frac{\sum x_i lny_i}{n}-\bar{x}\overline{lny}$